Project Manual
Operable Unit No. 1

881 Hillside IRA
Construction Phase IIB,
Water Treatment Facility
Collection & Discharge System

Manual No. 21100-PM-
OU 01.0
Volume 3

EG&G ROCKY FLATS

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PROJECT MANAGEMENT PLAN

FOR THE 881 HILLSIDE IRA

CONSTRUCTION PHASE 2B

WATER TREATMENT FACILITY COLLECTION

AND DISCHARGE SYSTEM

OPERABLE UNIT NO. 1

U.S. DEPARTMENT OF ENERGY

ROCKY FLATS PLANT

GOLDEN, COLORADO

ENVIRONMENTAL RESTORATION PROGRAM

ROCKY FLATS PLANT

TITLE:

Project Management Plan for the 881 Hillside IRA, Construction Phase 2B, Water Treatment Facility Collection and Discharge System, Operable Unit No. 1

Approved by:

Manager, Remediation Programs 11/1/91

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LIST OF ACRONYMS

CAR	Corrective Action Report
CC	Construction Coordinator
CDH	Colorado Department of Health
DOE/RFO	Department of Energy/Rocky Flats Office
EMA	Environmental Monitoring and Assessment
EPA	Environmental Protection Agency
EM	Environmental Management
FE	Facilities Engineering
FPM	Facilities Project Management
FTU	Field Treatment Unit
GFE	Government Furnished Equipment
H&S	Health and Safety
HSC	Health and Safety Coordinator
IAG	Interagency Agreement
IM	Interim Measure
IRA	Interim Remedial Action
NCR	Nonconformance Report
OU 1	Operable Unit Number 1
OUM	Operable Unit Manager
PM	Project Manager
PMP	Project Management Plan
QA	Quality Assurance
QAPjP	Quality Assurance Project Plan
RFP	Rocky Flats Plant
RP	Remediation Projects
RPT	Radiation Protection Technologist
WBS	Work Breakdown Structure

1.0 PROJECT BACKGROUND AND SCOPE

This document is the project Management Plan (PMP) for Construction Phase 2B of the Interim Remedial Action (IRA) at the 881 Hillside Area of the Rocky Flats Plant (RFP), Golden, Colorado. This PMP is intended to define the project scope, major milestones, organizational structure, reporting requirements, project documents, and key project personnel. This PMP will be revised when significant changes occur.

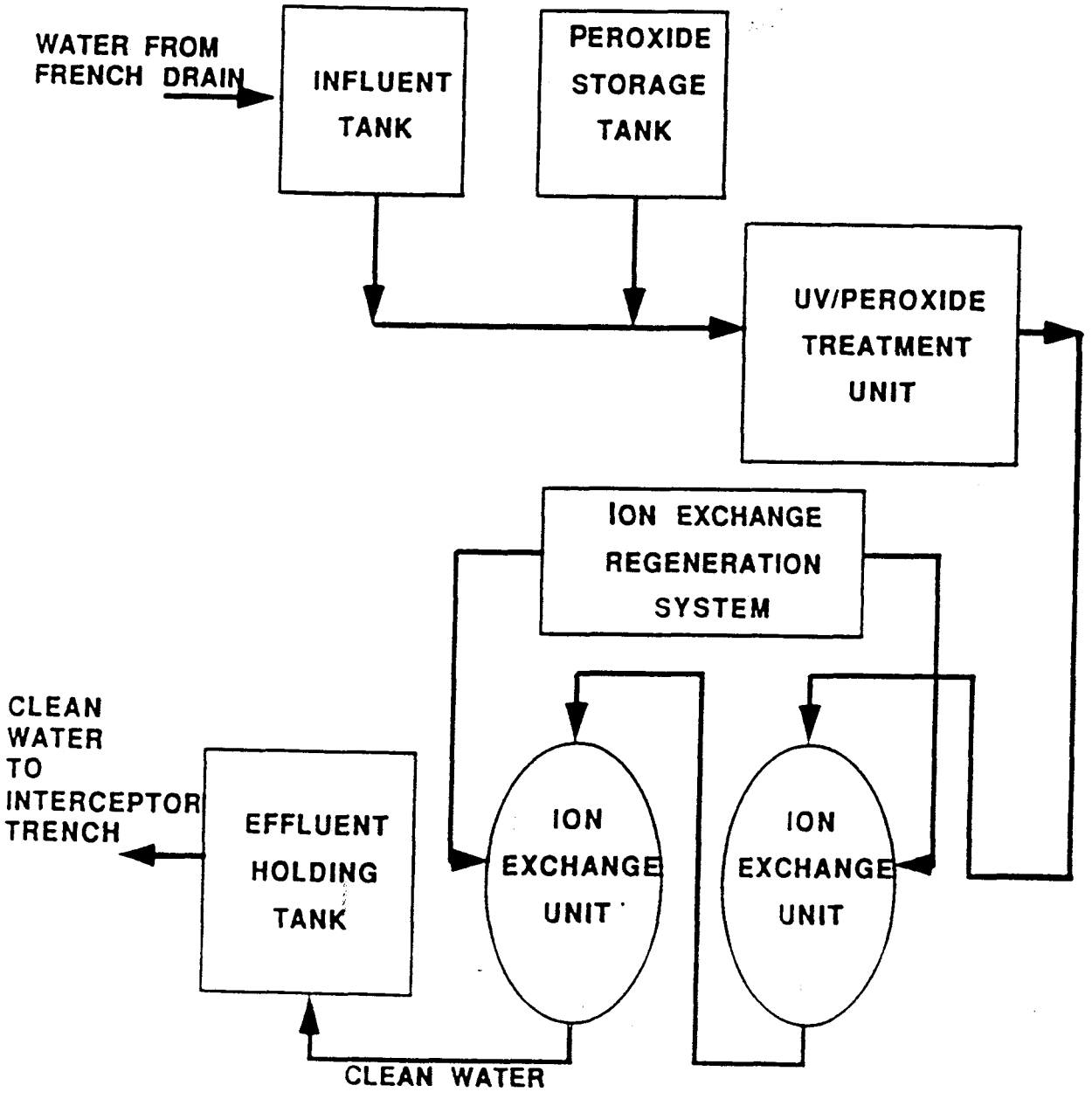
The RFP operated by EG&G Rocky Flats, Inc. is a government-owned, contractor-operated facility that began operations in 1951. The RFP is part of the U. S. Department of Energy's (DOE) nationwide nuclear weapons research, development, and production complex. In the past, both storage and disposal of hazardous and radioactive waste occurred at on-site locations at the RFP. The 881 Hillside Area has been designated Operable Unit 1 and includes twelve (12) waste sites. These sites were selected for investigation because of the known or suspected soil or groundwater contamination by volatile organic compounds, radioactive elements, heavy metals, and other inorganic compounds. A remedial investigation identified contamination in alluvial groundwater at the 881 Hillside Area.

DOE initiated a multi-phased Interim Measures/Interim Remedial Action (IM/IRA) at the 881 Hillside Area to minimize the release of hazardous substances. The IM/IRA includes design and construction of an interceptor trench to collect the contaminated groundwater and a treatment plant to remove the hazardous substances prior to release or reuse of the treated water. Please refer to the IRA Plan for specific technical and location information. The IRA required for Phase 2B includes:

- Installation of influent collection gallery (i.e., French drain), sumps, wells, pipeline, and electrical systems.
- Installation of effluent discharge line and structure.
- Construction of truck loading dock.
- Final grading and landscaping.

Figure 1.1

Proposed Water Treatment Facility Flow Sheet



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2.0 PROJECT MILESTONES

Completion of the major elements of work for Phase 2B OU 1 881 Hillside IRA are termed "milestones". Milestones serve as the basic management tool to monitor the project progress.

Table 2.1 presents the milestones that correspond to defined portions of the project schedule.

3.0 WORK BREAKDOWN STRUCTURE

The Work Breakdown Structure (WBS) is divided into six (6) major work scope activities: Project Management, Engineering, Construction, Health and Safety, Air Monitoring, and Quality Assurance. The key individuals contributing to the work scope activities are summarized below:

3.1 PROJECT MANAGEMENT

3.1.1 REMEDIAL ACTION PROJECT MANAGER

The Project Manager (PM) is assigned from the EG&G RPD and reports to the Manager of Remedial Action and the OU 1 Manager. The PM is responsible for preparing project plans and procedures; directing, controlling, and reporting project activities; maintaining construction health and safety documents; and communicating project requirements including any modifications to the project scope to the support organizations. Support groups include Environmental Monitoring and Assessment (EMA), Environmental/Waste Engineering (E/WPE) Project , Health and Safety (H&S), Remediation Programs (RP), the contractor and its subcontractors. The PM will also measure project progress, monitor the project budget, evaluate project performance, ensure compliance to health and safety issues, and serve as liaison with DOE/RFO, EPA, and CDH. The PM has stop work authority. The PM will have daily contact and interaction with the appointed DOE Site Manager in accordance with the Interagency Agreement (IAG). All work will be performed under the day-to-day oversight of the EG&G PM according to the project schedule and applicable health and safety requirements.

Table 2.1

Milestones for OU 1 Phase 2B Surface Water IRA

Milestone	Date
Begin Phase 2B IM/IRA construction	Sept. 3, 1991
Complete Phase 2B IM/IRA construction	March 2, 1992
Begin OU-1 IRA Testing	August 5, 1991
Complete OU-1 IRA Testing	April 3, 1992
Begin OU-1 IRA SO Test	March 2, 1992
Complete OU-1 IRA SO Test	April 3, 1992

3.1.2 PROJECT ADMINISTRATOR

The Project Administrator is assigned to the project and reports to the Environmental Restoration Engineering Manager. The Project Administrator (PA) serves as liaison between the RP Project Manager and the Project Engineer. The Project Administrator assists in the project budgeting, scoping and scheduling. The Project Administrator provides guidance and coordinates activities assigned to the Project Engineer and Construction Coordinator. Other duties are outlined in the FE and FPM manual.

3.2 ENGINEERING

The Project Engineer (PE) is assigned to the project and reports to the Environmental Restoration Engineering Manager in Environmental/Waste Project Engineering. The PE is responsible for procuring the services of an engineering design firm, preparing engineering design plans, construction specifications, and as-built construction drawings, and overseeing the activities of the engineering design firm and any associated plans and specifications as directed by the PM. Refer to the FE and PM Manual for a complete narrative of responsibilities other than those listed above.

3.3 CONSTRUCTION

The Construction Coordinator (CC) is assigned to the project by the Area Construction Manager and reports to the Facilities Project Administrator. Additionally the CC takes direction from the Remedial Action Project Manager in the field as necessary, when approved by the Project Administrator.

All construction activities by the Contractor and its subcontractors will be conducted in accordance with EG&G-provided engineering drawings and specifications, Statements of Work, Construction Work Procedures, and the Quality Assurance Addendum for 881 Hillside Phase IIA Construction.

The CC is the single-point-of-contact in the field for construction subcontractors. The CC coordinates and/or schedules any required utility outages, street closures, plant access requirements, technical

inspections of competed work and obtains all necessary plant construction work permits. The CC coordinates any required safety training of contractors and ensures work is conducted in accordance with all project safety regulations. The CC records all work progress, prepares "punch-lists" and other reports on subcontractor performance. Other duties are outlined in the FE and FPM Manual. The CC has stop work authority if project construction, health and safety, or quality criteria are not met.

3.4 HEALTH AND SAFETY

The Health and Safety Coordinator (HSC) is assigned to the project by the Occupational Safety Manager and reports to the PM. The HSC is responsible for coordinating all health and safety-related activities for the project including securing the services of health physicists, industrial hygienists, radiation protection technologists (RPTs), and safety engineers, as necessary. The HSC monitors the OU 1 Treatment Facility requirements as outlined in the Construction QAPjP, work procedures and the Contractor's OU 1 Construction Phase 2B site-specific Health and Safety Plan. The HSC ensures that radiologic and industrial hygiene measurements are taken, and monitors construction for personnel protection and industrial safety considerations, conducts health and safety work-site inspections, documents health and safety audits, and reviews all health and safety-related submittals prior to issuance. The Contractor shall develop, implement and monitor a site-specific health and safety plan, according to the outline in the Environmental Management Department's site-wide health and safety plan.

All EG&G employees, subcontractors, and their personnel who are assigned to this project are required to have all of the requisite training satisfying 29 CFR 1910 and 1926. The HSC or designees have stop work authority for all safety-related criteria.

3.5 AIR MONITORING

The Air Programs Representative is assigned to the project by EMA (Air Programs) and reports to the PM. The Air Programs group monitors meteorology and air quality for the Environmental Management (EM) Department. The Air Programs Representative is responsible for operation of high-volume air

samplers and reporting of air monitoring data. All analyzed air monitoring samples shall be reported immediately to the PM. Wind conditions will be reported to the PM, CC, and HSC as specified in the work procedures.

3.6 QUALITY ASSURANCE

The EM Department Quality Assurance Program Manager (QAPM) is assigned to the project by, and reports to, the EM Department Director. The Quality Coordinator is assigned to the project by, and reports to, the RPD Manager. The QAPM and the Quality Coordinator are responsible for ensuring that QA planning, implementation, and verification activities are applied to this IRA. Their specific responsibilities are described in the Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies.

4.0 PROJECT BUDGET

The budget for the OU 1 Construction Phase 2B will be tracked by the Program Planning and Control Manager. The Program Planning and Control Manager is assigned to the project by the manager of the RP Division and reports to the PM. Additionally, all contract and procurement budgets being administered by E/W PE will be tracked by the Project Administrator, who will coordinate with the EM program planning and control manager.

5.0 ORGANIZATIONAL STRUCTURE AND KEY PERSONNEL

Figure 5.1 presents the EG&G functional organizational structure and Figure 5.2 illustrates the EG&G project management structure for OU 1 Construction Phase 2B remedial action work.

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The EM Department Quality Assurance Program Manager (QAPM) is assigned to the project by, and reports to, the EM Department Director. The Quality Coordinator is assigned to the project by, and reports to, the RPD Manager. The QAPM and the Quality Coordinator are responsible for ensuring that QA planning, implementation, and verification activities are applied to this IRA. Their specific responsibilities are described in the Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies.

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5.0 ORGANIZATIONAL STRUCTURE AND KEY PERSONNEL

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Figure 5.1 Rocky Flats Organization Involved with 881 Hillside Restoration

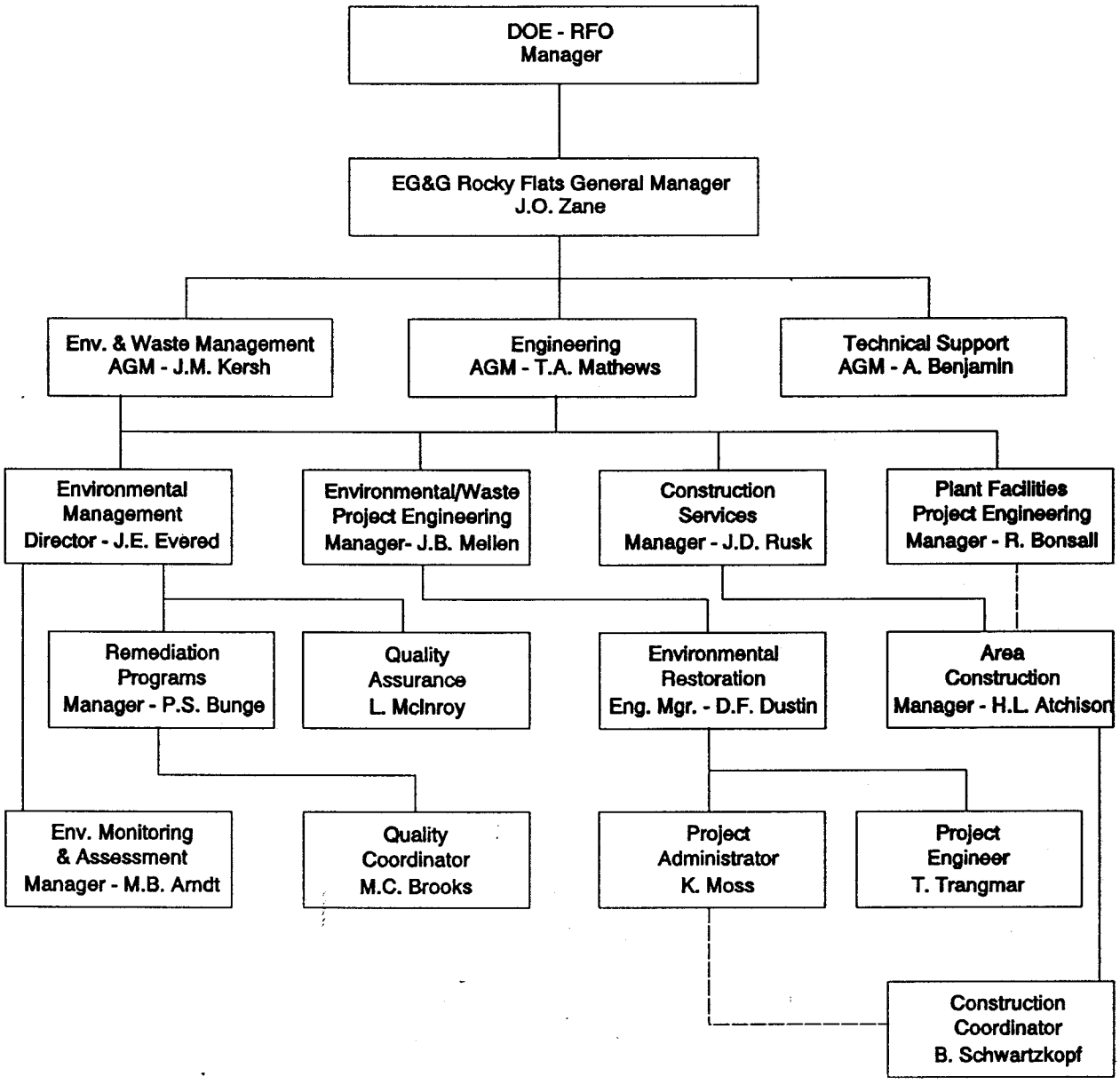

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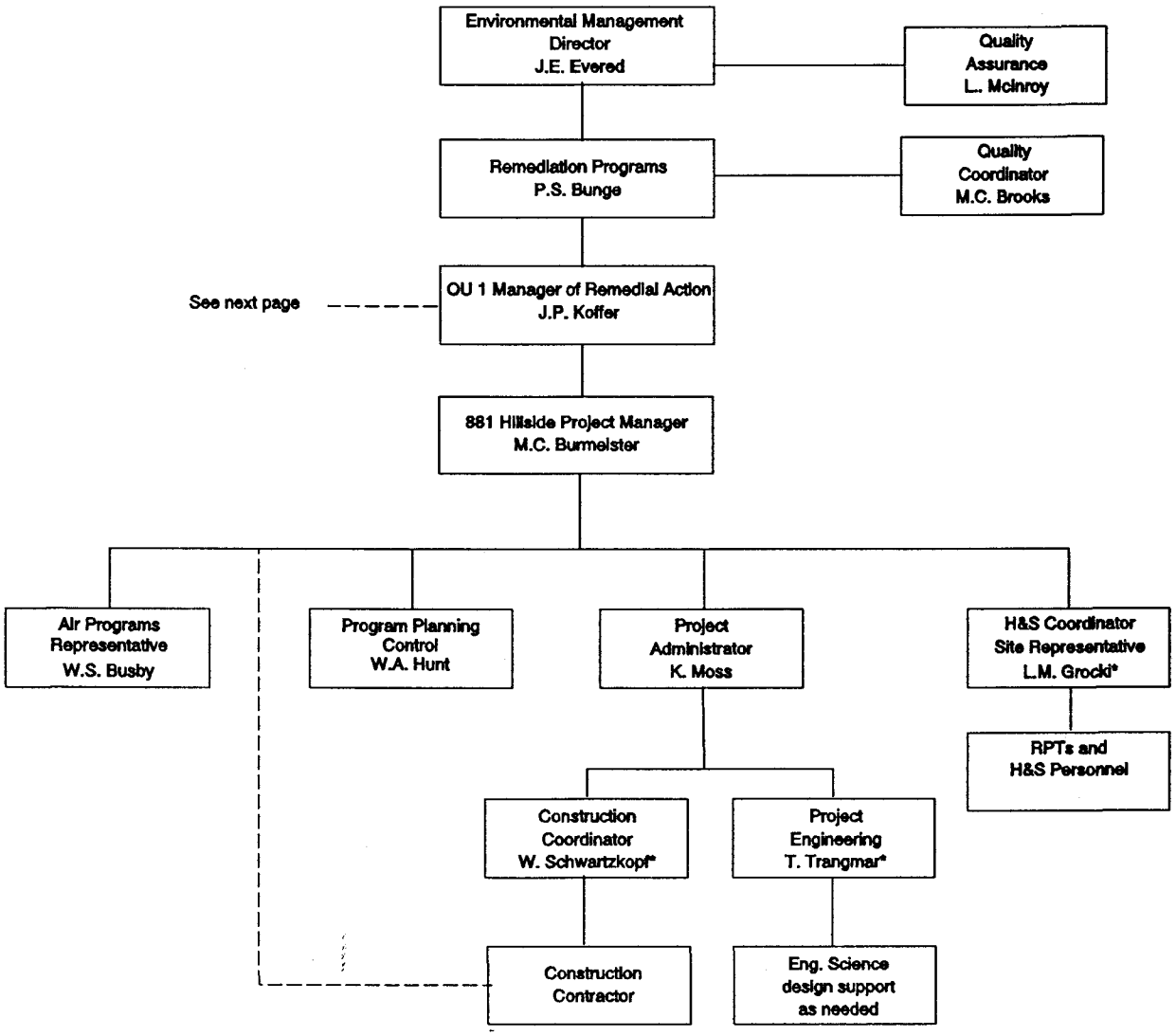
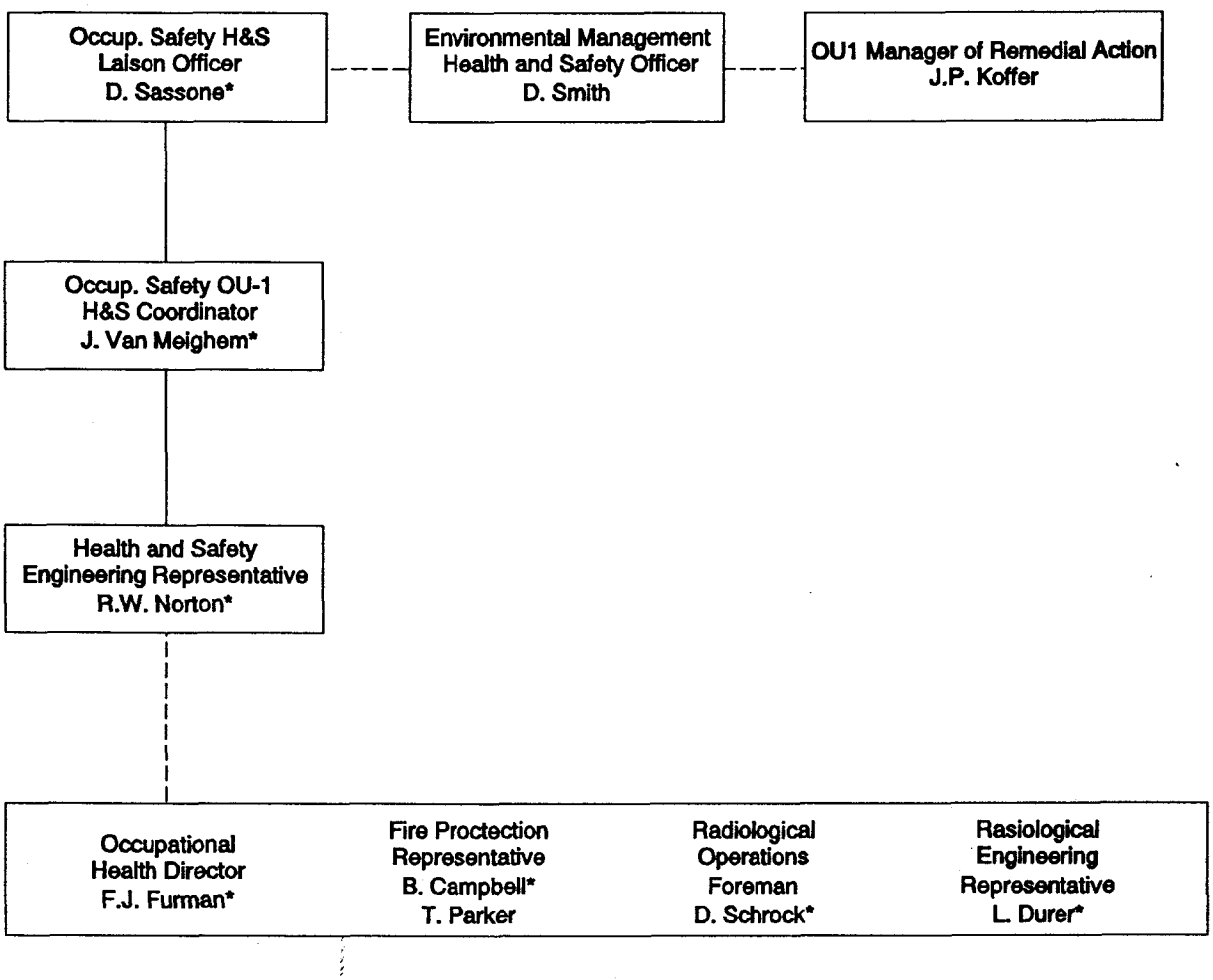
Figure 5.2 Management System 881 Hillside IRA-Phase 2B



* Denotes persons matrixed to this project from various other directorates

Figure 5.2 (Continued) Management System 881 Hillside IRA-Phase 2B



* Denotes persons matrixed to this project from various other directorates

6.0 PROJECT REPORTS

Progress and cost reporting of activities relating to the OU 1 Construction Phase 2B are the responsibility of the EG&G PM. However, each EG&G functional organization will be responsible for its own internal tracking and reporting. Reporting requirements may include:

- Construction Report including results of quality control inspections and tests and as-built drawings.
- Health and Safety Reports.
- Quality Assurance Reports.

7.0 PROJECT CHANGE CONTROL

A change control methodology will be utilized for the OU 1 Construction Phase 2B to allow the orderly handling of project changes. All design changes will be controlled by change orders handled by the PE and Project Administrator, and issued by the Construction Coordinator.

8.0 PERSONNEL CHANGES

If key personnel changes are made, the effect of the change on the project deliverable dates and quality will be assessed by the PM. If a significant impact on the project is anticipated, the PM will notify the RP Manager so that EG&G management can take corrective action.

9.0 PROJECT CONTROL DOCUMENTS

The documents that control project activities are listed below:

- Interim Remedial Action Plan
- Project Management Plan

- Work Procedures for Construction
- Plans and Specifications for Equipment Installation and Site Preparation
- EM Site-Wide Health and Safety Plan
- EM Standard Operating Procedures
- Quality Assurance Project Plans for Construction
- Health and Safety Plan
- Contractor's Plan
- Work Permit
- Excavation Permit
- Excavation Plan
- Facilities Engineering and Project Management Manual

These documents are located in T130B, Building 130, and at the job site. Construction, quality assurance, and health and safety records also will be maintained at T130B and at the job site. Records will be maintained by the respective document custodian, identified in Table 9.1.

Table 9.2 presents the responsible personnel and the appropriate backups of the project management structure.

Table 9.1

Project Records and Custodians

Record	Custodian
Project Specifications and Drawings, Addenda, and Change Orders	Todd Trangmar, PE Bldg. 130
Construction Coordinator's Log	W. Schwartzkopf, CS Construction Site
Project Manager's Log	Mark Burmeister, EM Bldg. T130B
QA Audits and Records	Mark Brooks, EM Bldg. T130B
Health and Safety Documentation (Documentation kept at site)	Mark Burmeister, EM Construction Site
Site Entry Log (Log kept at site)	Mark Burmeister, EM Construction Site

Table 9.2

Project Management Backup Listing

Title	Name	Backup
Project Manager	Mark Burmeister ext 5891 D - 4630	Jim Koffer ext 5949
Project Administrator	Ken Moss ext 3808	Bill Bruninga ext 3862
Construction Coordinator	Bill Schwartzkopf Page 5876 D - 3879	Jerry Blair ext 6346
Project Engineer	Todd Trangmar ext 3855	Don Dustin ext
HS Engr. Site Rep	Larry Grocki ext 2190	Larry Ross ext 2190
Air Programs Rep	Wanda Busby ext 5603	Mike Arndt ext 4294
QA Officer	Mark Brooks ext 3048	Larry McInroy ext 2941 or 279-7242
Security Shift Supt.	ext 2914	

QUALITY ASSURANCE ADDENDUM

QAA 1.4

to the

ROCKY FLATS PLANT SITE-WIDE QA PROJECT PLAN FOR CERCLA RI/FS AND RCRA RFI/CMS ACTIVITIES

FOR

PHASE IIB CONSTRUCTION 881 HILLSIDE (OPERABLE UNIT NO. 1) INTERIM REMEDIAL ACTION, COLLECTION AND DISCHARGE SYSTEM

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS PLANT
GOLDEN, COLORADO

ENVIRONMENTAL RESTORATION PROGRAM
ROCKY FLATS PLANT

Draft

TITLE:
Quality Assurance Addendum for
Phase IIB Construction 881 Hillside
(OU#1) Remedial Action, Collection and
Discharge System

Approved by:

M C Burmaster 11/1/91

Manager, Remediation Programs

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LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
AWWA	American Water Work Association
CARs	Corrective Action Reports
CC	Construction Coordinator
CDH	Colorado Department of Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DOE	U.S. Department of Energy
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
E/WE	EG&G Rocky Flats Environmental and Waste Engineering
FE	Facilities Engineer
FI	EG&G Rocky Flats Facilities Inspection
HSC	Health and Safety Coordinator
HSO	Health and Safety Officer
IAG	Interagency Agreement
IM	Interim Measure
IRA	Interim Remedial Action
NCRs	Nonconformance Reports
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PA	Project Administrator
PE	Project Engineer
PM	Project Manager
QA	Quality Assurance
QAA	Quality Assurance Addendum
QAPjP	Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies
QAPM	EM Department Quality Assurance Program Manager
RCRA	Resource Conservation and Recovery Act
RFP	Rocky Flats Plant
RPD	Remediation Programs Division
UV	Ultraviolet

INTRODUCTION AND SCOPE

This Quality Assurance Addendum (QAA) supplements the "Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities" (QAPjP) for the Remedial Action of 881 Hillside, Phase IIB Construction Collection and Discharge System. The 881 Hillside groundwater collection and discharge system is located within the area designated as Operable Unit No. 1 (OU-1) by the Interagency Agreement (IAG). This is the fourth QAA prepared for OU-1 activities and is, therefore, designated as QAA 1.4.

The OU-1 process treatment system is considered an interim measure/interim remedial action (IM/IRA), and consists of a groundwater collection, treatment, and discharge system that, when constructed, will collect contaminated groundwater from the Building 881 Hillside area and treat it with an ultraviolet light-hydrogen peroxide (UV/Peroxide) and ion exchange treatment process. The system will consist of the following components:

- A french drain groundwater collection system;
- Two sump pumps installed in the french drain to deliver water to the treatment unit storage tanks;
- A well that intercepts shallow contaminated water and delivers it to the treatment unit storage tanks;
- A pre-engineered ultraviolet light-hydrogen peroxide and ion exchange treatment system housed in a pre-engineered building (Building 891);
- A drain sump pump that intercepts foundation drainage around Building 891 and delivers it to the treatment storage tanks;
- Four 15,000-gallon influent storage tanks with level measurement and freezing protection;
- Three 159,000-gallon effluent storage tanks; and
- A discharge system.

Construction and installation of Building 891 and the influent storage tanks were completed during 881 Hillside Phase IB construction. Phase IIA construction consisted of construction and installation of:

- Indoor and outdoor transfer piping;
- Electrical components and controls for the influent tanks;
- Chemical storage and transfer facilities;
- Completion of Building 891 electrical and outdoor lighting;
- Installation of UV/Peroxide treatment unit and ion exchange treatment system, which are government-furnished equipment, including installation of electrical components and controls; and
- Three welded steel, double wall, 159,000 gallon effluent storage tanks and their foundations.

Phase IIB construction, which is covered by this QAA, includes construction and installation of the following:

- Influent collection gallery (i.e., French drain), sumps, wells, pipelines, and electrical;
- Effluent discharge line and structure;
- Truck loading dock; and
- Final grading and landscaping.

1.0 ORGANIZATION AND RESPONSIBILITIES

The overall organization of EG&G Rocky Flats and the Environmental Management (EM) Department divisions involved in Rocky Flats Plant (RFP) environmental restoration (ER) program activities are shown in Section 1.0 of the QAPjP. ER program management responsibilities are also discussed in the QAPjP. The organization for Hillside 881 Phase IIB construction activities is shown here in Figure 1. Organizational responsibilities for EG&G Rocky Flats personnel involved in Phase IIB

construction that were not described in the QAPjP are discussed here. Contractors will be tasked by EG&G Rocky Flats to complete the 881 Hillside Phase IIB construction. The EG&G Rocky Flats personnel who will interface with the construction contractor are also shown in Figure 1.

Project Manager

The Remedial Action Project Manager (PM) is assigned from the EG&G Remediation Programs Division (RPD). The PM reports to the OU-1 Project Manager and is responsible for interfacing with and communicating project requirements and modifications to support staff from other departments and divisions. The PM is also responsible for preparing project plans and procedures, directing and controlling project activities, maintaining construction health and safety documents, measuring project progress, monitoring the project budget, evaluating and reporting project performance, and serving as liaison with the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Colorado Department of Health (CDH). All work will be performed under the oversight of the PM, who also has stop work authority.

Project Administrator

The Project Administrator (PA) is assigned to the project by EG&G Rocky Flats Environmental and Waste Engineering (E/WE). The PA serves as liaison between the Remediation Program's Project Manager and E/WE. The PA assists in the design and construction phases of the project budgeting and administration, scoping, and scheduling activities. The PA provides guidance and coordinates tasks assigned to the E/WE Project Engineer and Construction Coordinator (CC).

Environmental and Waste Engineering Project Engineer

The E/WE Project Engineer (PE) is assigned to the project by E/WE and reports to the Project Administrator as well as the Project Manager. During the design and construction phases of the

FIGURE 1. 881 Hillside (OU-1) Phase IIB Construction Project Management

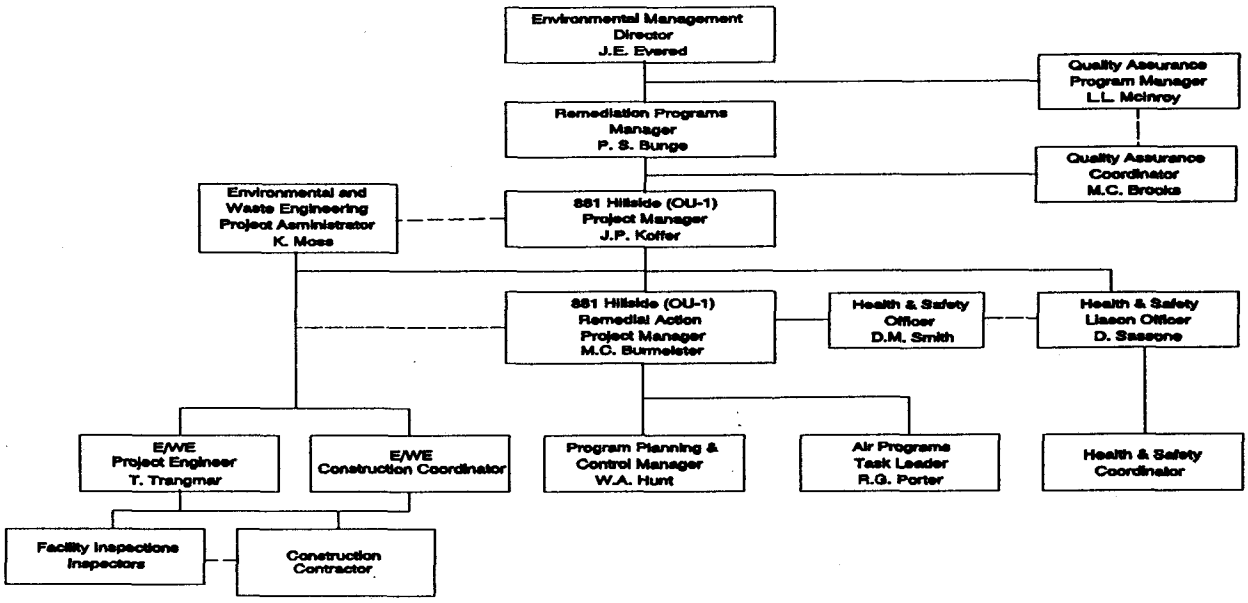

Figure 1. 881 Hillside (OU-1) Phase IIA Construction Project Management

project, the PE is responsible for procuring the services of an engineering design firm, reviewing contractor-prepared engineering design plans, preparing construction and performance specifications, providing as-built construction drawings, and overseeing the activities of the engineering design firm and any associated plans and specifications as directed by the Project Manager.

Construction Coordinator

The Construction Coordinator (CC) is assigned to the project by EG&G Rocky Flats Construction Services and reports to the Project Administrator. All construction activities by the Construction Contractor and its subcontractors will be conducted in accordance with EG&G-approved engineering drawings and performance specifications, Statements of Work, Construction Work Procedures, the QAPjP, and this QAA. The CC is a point-of-contact in the field for the contractor and its subcontractors. The CC coordinates and/or schedules any required utility outages, street closures, plant access requirements; provides technical inspections of completed work; and obtains all necessary plant construction work permits. The CC coordinates any required safety training of contractors and ensures work is conducted in accordance with all project safety regulations. The CC ensures that radiological and industrial hygiene measurements are taken and coordinates these activities with the Radiation Protection Technologists and Industrial Hygienists. The CC records all work progress and prepares "punch lists" and other reports on contractor/subcontractor performance. The Facilities Engineering and Facilities Project Management Manual outlines any other duties of the CC. The CC has stop work authority if project construction, health and safety, or quality criteria are not met.

Health and Safety Officer

The Health and Safety Officer (HSO) is assigned from the EG&G RPD and reports to the Project Manager. The HSO is responsible for interfacing with the Occupational Safety Organization regarding Health and Safety-related activities for the project.

Health & Safety Coordinator

The Health and Safety Coordinator (HSC) is assigned to the project by the Occupational Safety Manager and reports to the Health and Safety Liaison Officer and the Project Manager. The HSC is responsible for coordinating all health and safety-related activities for the project, including securing the services of Health Physicists, Industrial Hygienists, and Safety Engineers, as necessary. The HSC will monitor the OU-1 Phase IIB construction requirements as outlined in the Contractor's Site-Specific Health and Safety Plan for 881 Hillside Construction. The HSC monitors construction for personnel protection and industrial safety considerations, conducts health and safety worksite inspections, documents health and safety audits, and reviews all health and safety-related submittals prior to issuance. The Contractor shall develop, implement, and monitor a site-specific health and safety plan.

2.0 QUALITY ASSURANCE PROGRAM

The QAPjP was written to specifically address QA controls for IAG related activities. The content of the QAPjP was driven by DOE RFP SOP 5700.6B, which requires that a QA program be implemented for all RFP activities based on American Society of Mechanical Engineers (ASME) NQA-1, "Quality Assurance Requirements for Nuclear Facilities," as well as the IAG, which specifies that a QAPjP for IAG-related activities be developed in accordance with EPA QAMS-005/80, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans." The 18-element format of NQA-1 was selected as the basis for both the plan and subsequent QAAs with the applicable elements of EPA QAMS-005/80 incorporated where appropriate.

The QAA controls and requirements addressed in the QAPjP are applicable to the Phase IIB construction activities for 881 Hillside, unless otherwise specified in this QAA. As a supplement to the QAPjP, this QAA adds site-specific QA controls and requirements that are applicable to 881 Hillside Phase IIB construction.

2.1 Training, Qualification, and Certification

All personnel (including contractor/subcontractor personnel) shall complete the RFP orientation and personnel training specified in Section No. 2.0 of the QAPjP. This required personnel training includes site-specific and site-wide health and safety training and Radiation Safety Training. The Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Site Worker Safety Training and the OSHA 8-Hour Hazardous Waste Site Worker Safety Refresher course required in the QAPjP are applicable, to individuals who work in controlled areas of the site.

The construction contractor shall be responsible for ensuring that construction personnel are properly qualified and certified as identified in job descriptions. The construction contractor's project manager will furnish the EG&G Rocky Flats CC (see Figure 1) with evidence of certification for those positions requiring certified personnel.

EG&G Rocky Flats Facilities Inspection (FI) Department shall provide trained and qualified inspectors for inspecting construction, electrical wiring, piping, process system controls, and installation of the collection and discharge system. These inspectors shall meet the minimum qualifications for inspectors as specified in the RFP Site-wide Quality Assurance Manual.

3.0 DESIGN CONTROL AND CONTROL OF SCIENTIFIC INVESTIGATIONS

This activity consists of constructing/installing a plant facility, for which the design control methods are addressed in the RFP Facilities Engineering and Project Management Manual used to satisfy DOE Order 6430.1A. Specific design control requirements that are applicable to 881 Hillside Phase IIB construction are included in the "Specifications and Drawings for Remedial Action, 881 Hillside Phase IIB Construction (Collection and Discharge System)" dated February 1991. Contractors performing the Phase IIB construction and installation activities are required to adhere to requirements, specifications, codes, and standards contained in the specifications and drawings package. The EG&G E/WE Project Engineer (see Figure 1) shall be responsible for

reviewing and approving any changes to approved specifications and drawings. The Project Engineer is also responsible for issuing engineering orders or field change orders in accordance with RFP E/WE procedures.

In addition to the specifications and drawings package for Phase IIB construction, a single-use instruction has been prepared to control the excavation for the 881 Hillside french drain. The excavation instruction, designated as SUI-OU01.1, is intended as a guideline to be followed for excavation activities associated with the installation of the groundwater collection system.

3.1 Data Quality Objectives

No measurement data will be collected as a result of the construction activities addressed by this QAA. Therefore, data quality objectives discussed in the QAPjP are not applicable.

4.0 PROCUREMENT DOCUMENT CONTROL

The procurement document control requirements specified in Section No. 4.0 of the QAPjP are applicable to all Phase IIB 881 Hillside procurement packages.

Contractors will construct and install the 881 Hillside groundwater treatment system. The contractors will be required to adhere to all requirements in the specifications and drawings for the Phase IIB Construction Remedial Action 881 Hillside.

The construction contractor will be required to provide the materials necessary for completing the Phase IIB 881 Hillside construction.

Procurement of equipment and materials necessary to complete Phase IIB 881 Hillside construction will be controlled by E/WE in accordance with procurement document control requirements specified in the RFP Site-wide Quality Assurance Manual. Procurement packages for Phase IIB 881

Hillside contracted and subcontracted services will be reviewed and approved by E/WE and EG&G RFP Procurement Quality Engineer.

5.0 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

The "Specifications and Drawings for Remedial Action 881 Hillside, Phase IIB Construction (Collection and Discharge System) includes the instructions and drawings for completing the construction activities addressed by this QAA. Those specifications and drawings were developed for and reviewed and approved by E/WE in a manner that satisfies the requirements of Section No. 5.0 of the QAPjP. Any changes or revisions to those specifications and drawings shall also be reviewed and approved.

A single-use instruction for controlling the excavation for installation of the french drain has been developed and is designated as SUI-OU01.1, Excavation Control. An operating procedure has been developed to describe the hydraulic conductivity tests of bedrock materials exposed during the excavation of the groundwater collection system (i.e., French drain). This procedure is designated as Procedure No. 5-21000-OPS-GT.23, In-Situ Hydraulic Conductivity Test, and will be added as a geotechnical operating procedure to the EG&G EM Department Operating Procedures. Other EG&G Operating Procedures that are applicable to Phase IIB construction are referenced in procedure 5-21000-OPS-GT.23 and instruction SUI-OU01.1.

6.0 DOCUMENT CONTROL

The following documents will be controlled in accordance with the document control requirements of Section No. 5.0 of the QAPjP:

- Project Management Plan for Phase IIB Construction 881 Hillside Remedial Action, Process Treatment System;

- Remedial Action 881 Hillside, Phase IIB Construction (Collection and Discharge System);
- Instruction SUI-OU01.1, Excavation Control
- Operating Procedure 5-21000-OPS-GT.23, In-Situ Hydraulic Conductivity Test;
- Construction Management Package for the Phase IIB Construction (Remedial Action 881, Collection and Discharge System);
- Quality Assurance Addendum (QAA 1.4) to the Site Wide QAPjP, for Phase IIB Construction 881 Hillside Remedial Action, Collection and Discharge System.

7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

The contractor that will provide construction services for the Phase IIB 881 Hillside construction has been selected and evaluated in a manner that meets the requirements of Section No. 7.0 of the QAPjP. The construction contractor(s) shall furnish construction materials that meet the requirements specified in the specifications and drawings package for Phase IIB construction. Any deviations to those requirements shall be reviewed and approved by E/WE prior to acceptance.

8.0 IDENTIFICATION AND CONTROL OF ITEMS, SAMPLES, AND DATA

The specifications and drawings for Phase IIB construction contain the requirements, codes, and standards for the construction materials, items, parts, and components for the 881 Hillside collection and discharge system. Any incorrect and defective items and materials that are noted during construction or installation will be identified, tagged, and documented to preclude inadvertent use according to the requirements of Section No. 8.0 of the QAPjP.

The requirements for the control of samples and data discussed in the QAPjP are not applicable to these construction and installation activities.

9.0 CONTROL OF PROCESSES

The requirements for the control of processes are not applicable to the Phase IIB 881 Hillside construction activities. Construction activities and installation of the collection and installation system will be controlled through inspections and tests.

10.0 INSPECTION

Procured items, parts, and components and construction activities and materials shall be inspected (as applicable) by trained and qualified inspectors provided by EG&G Facility Inspections Department (FI) in a manner that meets the requirements of Section No. 10.0 of the QAPjP. The acceptance criteria for construction items and activities that will be inspected shall be included in Quality Acceptance Criteria Checklists.

Inspections shall be conducted for the following activities:

- Earthwork;
- Construction of the Collection Gallery;
- Landscaping;
- Concrete and grout work;
- Fabrication and erection of steelwork;
- Application of caulking and sealants;
- Installation of collection well and collection gallery sumps;
- Installation and flushing of piping and appurtenances;
- Installation of valves, regulators, and miscellaneous components; and
- Installation of all electrical components and electrical power equipment.

Inspection checklists shall be developed based on the requirements, standards, and codes presented in the specifications and drawings package for Phase IIB construction.

11.0 TEST CONTROL

All piping, including valves, shall be subject to hydrostatic leakage and operational tests according to Rocky Flats Plant Standard SP-301. This involves field testing at a hydrostatic pressure of 1.5 times the pipe pressure class. All pumps shall be tested as recommended by the manufacturers. All electrical components and wiring shall be tested for continuity and grounds as specified in the specifications and drawings package. Test results shall be recorded on Component Checkout Forms.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

Measuring and testing equipment that are used to test the components of the collection and discharge system will be controlled, calibrated, and maintained according to the manufacturers' specifications.

13.0 HANDLING, STORAGE, AND SHIPPING

The items, parts, and components used during the construction and installation of the 881 Hillside groundwater collection and discharge system shall be shipped, handled, and stored according to instructions provided in procurement packages and in accordance with manufacturer's instructions.

14.0 STATUS OF INSPECTION, TEST, AND OPERATIONS

The inspection checklists will provide documentation as to whether or not the item/activity met the specified acceptance criteria. These checklists shall be initialed and dated by the responsible inspector.

The Component Checkout forms will document the status of the individual components of the collection and discharge system based on the results of the generic component testing. All test data from the system operational testing shall be recorded on System Operational test sheets during the equipment testing. The record of this test data shall provide evidence regarding the operational status of the 881 Hillside groundwater collection and discharge system.

15.0 CONTROL OF NONCONFORMANCES

The requirements for the identification, control, evaluation, and disposition of nonconforming items will be implemented to meet the requirements of Section No. 15.0 of the QAPjP. Nonconformances identified by the construction contractor and subcontractors shall be reported to the EG&G CC. Copies of nonconformance reports (NCRs) prepared as a result of these nonconformances and nonconformances observed by FI Inspectors during inspections and testing will be submitted to the Project Manager, who will in turn submit a copy of all NCRs to the EM Department Quality Assurance Program Manager (QAPM). The QAPM will tract the processing of all NCRs.

16.0 CORRECTIVE ACTION

The identification, documentation, and verification of corrective actions for conditions adverse to quality will be implemented such that the requirements of Section No. 16.0 of the QAPjP are met. Conditions adverse to quality identified by the construction contractor and Inspectors that result in the preparation of Corrective Action Reports (CARs) shall be forwarded to the Project Manager and the EM Department (QAPM) for tracking. The processing of CARs shall be handled by the FI Department.

17.0 QUALITY ASSURANCE RECORDS

All construction and installation records are considered Quality Assurance (QA) records and shall be processed in accordance with the requirements of Section No. 17.0 of the QAPjP. QA records to be generated during Phase IIB Construction for 881 Hillside remedial action include, but are not necessarily limited to:

- The QAPjP/QAA
- Inspection and Testing Records
- Audit/Surveillance/Inspection Reports
- Nonconformance Reports
- Corrective Action Reports
- Procurement/Contracting Documentation
- Training/Qualification Records

All Phase IIB construction records designated as QA records will be submitted to the ER Department Document Custodian for processing according to the EM Department QA records system described in Section No. 17.0 of the QAPjP.

18.0 QUALITY VERIFICATION

The requirements for the verification of quality shall be implemented as specified in Section No. 18 of the QAPjP. Audits and/or surveillances of the construction and installation activities performed by the construction contractor and of the inspections and tests performed by the Facilities Engineer (FE) will be scheduled by the EM Department QAPM, or designee, in consultation and concurrence with the Construction Coordinator. The Construction Coordinator may schedule inspections independently from the QAPM. The QAPM, or designee, may witness inspections schedule by the QAPM. Inspection and test records and documentation will be audited as deemed necessary by the EM Department QAPM.

19.0 SOFTWARE CONTROL

The use of software for the construction and installation activities associated with Phase IIB 881 Hillside remedial action construction is not anticipated. Therefore, the software control requirements discussed in Section No. 19.0 of the QAPjP are not applicable.

ENVIRONMENTAL RESTORATION PROGRAM	**Manual: 21100-PM-OU01.0**
Single Use Instruction for	**Document No.:SUI-OU01.1, Rev 0**
Operable Unit No. 1, Phase IIB	**Page: 1 of 9**
Construction	**Effective Date: 11/1/91**

TITLE:
French Drain Excavation Control

Approved By:

M C Brunetta 11/1/91

Manager, Remediation Programs

1.0 PURPOSE/SCOPE

This instruction describes the guidelines necessary for controlling trench excavation of the 881 Hillside (Operable Unit No. 1) French Drain. The U.S. Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH) require excavation plans for trenching activities at RFP. This instruction is intended to serve as the excavation plan for the 881 Hillside French Drain.

2.0 DEFINITIONS/ACRONYMS

2.1	CC	- Construction Contractor responsible for 881 Hillside French Drain excavation
2.2	CCPM	- Construction Contractor Project Manager
2.3	EMD	- Environmental Management Division
2.4	EG&G PM	- EG&G Remediations Program Project Manager for 881 Hillside Phase 2B Construction
2.5	H&S	- EG&G Health and Safety Organization
2.6	IHSS	- Individual Hazardous Substance Sites
2.7	RPT	- Radiation Protection Technician

3.0 REFERENCES

3.1 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.01, Air Monitoring and Dust Control

3.2 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.02, Field Document Control

3.3 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.03, General Equipment Decontamination

3.4 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.04, Heavy Equipment Decontamination

3.5 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.10, Receiving, Labeling, and Handling Environmental Materials Containers

3.6 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-FO.16, Field Radiological Measurements

3.7 EG&G Rocky Flats EMD Operating Procedure 5-21000-OPS-GT.09, Soil Gas Sampling and Field Analysis

4.0 PREREQUISITES

4.1 Prior to commencing excavation activities, the location of all Individual Hazardous Substances Sites (IHSSs) shall be established by field location markers. The EG&G OU-1 Construction Project Manager (EG&G PM) is responsible for ensuring that all IHSS locations that are in the vicinity of any excavation are adequately marked.

4.2 An excavation permit shall be obtained from the EG&G Construction Manager by the EG&G PM, or designee, prior to commencing excavation activities for all excavations deeper than 18 inches. The 881 Hillside Phase IIB construction contractor's project manager (Contractor PM) shall maintain the excavation permit at the excavation site during the period of excavation.

4.3 The construction contractor shall decontaminate excavation equipment prior to initiating excavation operations according to decontamination procedures described in EMD Operating Procedures 5-21000-OPS-FO.03, General Equipment Decontamination and 5-21000-OPS-FO.04, Heavy Equipment Decontamination.

5.0 LIMITS AND PRECAUTIONS

5.1 If the excavations extends deeper than four feet it must be examined by the cognizant H&S representative and measures shall be taken by the construction contractor to comply with Occupational Safety and Health Administration (OSHA) regulations prior to personnel entry.

5.2 All excavation activities shall be conducted in accordance with the site-specific Health & Safety Plan.

5.3 All non-essential vehicles and personnel shall be prohibited from entering the exclusion zone at the excavation/construction site.

5.4 All personnel and equipment in controlled areas will be monitored according to procedures in EMD Operating Procedure 5-21000-OPS-FO.16, Field Radiological Measurements, prior to exiting the site.

5.5 Since excavations are intrusive activities, the EG&G PM shall ensure that site-specific air monitoring and dust control procedures, as described in EMD Operating Procedure 5-21000-OPS-FO.01, Air Monitoring and Dust Control, are adhered to during excavation operations.

5.6 Excavation equipment shall be decontaminated at the conclusion of excavation operations according to the previously referenced procedures.

5.7 Soil shall be monitored by the EG&G Health and Safety (H&S) representative for possible radioactivity and organic vapors prior to any earth moving activities. Field surveying for organic vapors shall be conducted as described in EMD Operating Procedure 5-21000-OPS-GT.09, Soil Gas Sampling and Field Analysis. Field radiation surveys will be done according to EMD Operating Procedure 5-21000-OPS-FO.16, Field Radiological Measurements. Any soil with above background readings shall be considered contaminated soils, and appropriate personnel protective equipment used as specified in the H&S Plan. Monitoring of possible organic vapors and radioactivity will continue during excavation.

6.0 PROCEDURE

RESPONSIBILITY		ACTION
	6.1	Erosion and sediment control measures:
CC	6.1.1	Control the rate of runoff entering the excavation/ construction site through the use of temporary erosion bales. Erosion bales, to be provided by the construction contractor, shall consist of hay, straw or other material approved by the EG&G PM.

NOTE

Typical erosion control bales contain approximately 5 cubic feet of material and weigh not less than 35 lbs.

6.1.2 Anchor securely tied erosion bales shall to the ground with steel bars or wooden stakes.

NOTE

Anchors typically consist of #4 steel bars 4 feet long or wood stakes approximately 2 inch X 2 inch X 3 feet long.

6.1.3 Construct benches, berms, and silt fences, as necessary to retard and control the rate of runoff from the construction site.

NOTE

Silt fences should be constructed of Mirafi 100x sediment control fabric or EG&G approved equal. Silt fence support posts shall be metal or wood (4 inch minimum width) with a minimum length of 5 feet driven to a depth of 2 feet at 6 feet spacing. The wire support fence shall be chicken wire or EG&G approved equivalent and with wire ties or staples. The

filter cloth (42 inches wide) shall be secured to the top of the wire fence with wire ties. The bottom edge of the filter cloth shall be buried in a trench 6 inches deep along the base of the fence to prevent underflow. When no longer needed to control runoff, the posts, wire fence and filter cloth shall be removed and the accumulated sediment removed as excess fill (see NOTE following Step 6.2.4).

6.2 Surface Excavation

EG&G PM 6.2.1 Establish the route of the trench excavation with stakes or other appropriate markers.

6.2.2 Ensure that the South Interceptor Ditch wetlands area is marked and avoided during excavation.

CCPM 6.2.3 Complete the Excavation Field Activities Report (Form SUI OU0.1A, provided here as Attachment 1) through the "Start Date."

NOTE

Any pertinent observations or actions noted or undertaken during excavation should be recorded and dated in the comments section of the Excavation Field Activities Report.

CC 6.2.4 Strip topsoil in all excavation and fill areas to a depth of approximately six inches and stockpile topsoil separately from other excavated material for later use in finish grading.

NOTE

The width of the topsoil scrape zone shall be wide enough to accommodate the expected volume of soil from the excavation without coming in contact with unexcavated surface soil adjacent to it.

6.2.5 Keep the surface soil sufficiently wetted to control fugitive dust during this operation (refer to EMD Operating Procedure 5-21000-OPS-FO.01).

6.2.6 Cover or stabilize stockpiled topsoil to prevent resuspension of dust.

NOTE

The topsoil stockpile may be situated such that it acts as a wind break and a runoff control berm to keep surface water from entering the trench during construction activities.

Soil from areas designated as IHSSs shall not be removed from the limits of these areas as located in the field (see Prerequisite 4.1). Field location markers of IHSSs within the worksite are to be maintained by the construction contractor during construction activities.

In the event that any chemical or radiological hazards are discovered, whether surficial or subsurface, that have not been previously identified, all local construction activities will cease until permission to proceed is given from the cognizant EG&G H&S personnel (i.e., the site RPT).

6.3 Subsurface Soil Excavation

CC 6.3.1 Handle excavated subsurface soil at a moisture content sufficient to prevent resuspension of dust (refer to EMD Operating Procedure 5-21000-OPS-FO.01).

6.3.2 Selectively stockpile excavated subsurface soils near the excavation to allow backfilling of the material in the general order in which it was removed.

6.3.3 Store soil excavated below the topsoil scrape (see Step 6.2.3) near the area undergoing excavation in a low pile, and covered to prevent windblown dispersion of soils.

NOTE

Any subsurface soil that is excavated from within an IHSS boundary or has been identified as contaminated (see Prerequisite 4.4) shall not be removed from that site.

CCPM 6.3.4 Record completion date and depth, width, and length of excavation on the Excavation Field Activities Report.

6.4 Backfilling

CC 6.4.1 Backfill excavated material in horizontal layers not in excess of 12 inches in thickness and compact each lift separately with compaction equipment.

NOTE

The stockpiled topsoil (see Step 6.2.3) shall be spread over the excavation last. The topsoil lift shall not be compacted. Backfill material should have a moisture content of approximately plus or minus 2% of optimum moisture content such that the required degree of compaction may be obtained. Each lift should be compacted to 90% of maximum density as determined by standard construction practices.

6.4.2 Restore the excavation to approximate original elevation and contour, unless noted otherwise on construction drawing specifications.

NOTE

A RFP Standing Order is being drafted to control excavations in IHSSs. Any excess fill material excavated from within IHSS boundaries or that has been determined to be potentially contaminated (see Prerequisite 4.4) shall be handled according to the draft standing order for Excavation and Construction in Individual Hazardous Substance Sites, or as directed by the EG&G PM until the standing order is approved and issued.

CCPM 6.4.3 Record the date backfilled, date restored (if applicable), approximate volume of excess material removed from the site, and sign and date the Excavation Field Activities Report.

6.5 Submit Field Records

CCPM 6.5.1 Transmit Excavation Field Activities Report and any other field records regarding excavation operations (e.g., field logbook) to the EG&G PM in accordance with the procedures described in EMD Operating Procedure 5-21000-OPS-FO.02, Field Document Control.

EG&G PM 6.5.2 Transmit Excavation Field Activities Report and any other field records received from the CCPM to EMD Records Management as Quality Assurance Records in accordance with 5-21000-OPS-FO.02.

7.0 AUTHENTICATION

Authentication of completion of this procedure is documented by completing the Excavation Field Activities Report (Form SUI OU01.1A). The completed, signed, and dated Excavation Field Activities Report is considered a Quality Assurance Record.

ATTACHMENT 1

U.S. DEPARTMENT OF ENERGY ROCKY FLATS PLANT FORM SUI OU01.1A

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EXCAVATION
FIELD ACTIVITIES REPORT

PROJECT NUMBER _____ PROJECT NAME _____

EXCAVATION IDENTIFICATION _____

EXCAVATION CONTRACTOR _____

CONSTRUCTION CONTRACTOR PROJECT MANAGER _____

EG&G PROJECT MANAGER _____

EXCAVATION PERMIT NO. _____ LOCATION CLEARED (Y/N) _____

EXCAVATION LOCATION _____

START DATE _____ COMPLETION DATE _____

DEPTH _____ WIDTH _____ LENGTH _____

DATE BACKFILLED _____ DATE RESTORED _____

APPROXIMATE VOLUME OF EXCESS MATERIAL _____

COMMENTS _____

_____

_____

_____ _____ __/__/__
Name Signature Date